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INDUSTRIAL MICROBIOLOGY

Development of Microbiological Industry 1

INDUSTRIAL MICROBIOLOGY

DEVELOPMENT OF MICROBIOLOGICAL INDUSTRY

Moscow EKONOMICHESKAYA GAZETA in Russian No 42, Oct 81 pp 1-2

[Survey: "Advances Under the 11th Five-Year Plan--Development of the Microbiological Industry"]

[Text] Under the 11th Five-Year Plan, there will be further development of one of the youngest sectors of our industry, the microbiological industry, as part of the agroindustrial complex of our country. An important role is given to it by the decisions of the 26th Party Congress in fortifying the feed base of the livestock industry.

The goal has been set to implement measures under the 11th Five-Year Plan to expedite development of production on the basis of microbiological synthesis to increase the output of this sector by a factor of 1.8-1.9.

It is projected that labor productivity in this sector will increase by 38-42% in these 5 years as a result of introduction of achievements of science and technology, improved organization of production and management methods.

Considerable capital investments have been allocated for development of this sector in 1981-1985. There are plans to start up a number of new production facilities, remodel and refurbish existing enterprises. Automation of technological processes and equipment with high unit capacity are being introduced on a broad scale.

The microbiological industry is a rapidly developing sector of the chemical industry, which is specialized in the production of products for intensification of agriculture. Enterprises under the Glavmikrobioprom [Main Administration for the Microbiological Industry] are supplying feed yeast, essential amino acids (lysine), premixed feed (complex supplements), vitamins, enzymes, feed and veterinary antibiotics and other highly effective agents that increase productivity of cattle and fowl. Microbiological agents for the protection of plants and bacterial fertilizers are instrumental in increasing the harvest of food, feed and industrial crops. There is also expansion of output of products and preparations needed by the textile, food, medical, chemical and other sectors of industry, and for scientific research.

The microbiological industry was formed as an independent sector in 1966. As a result of the concern of the party and government, it is developing rapidly on the basis of scientific and technological progress. In the last 15 years, the overall output of products of microbiological synthesis has increased by almost 10 times, and deliveries to agriculture have increased by 20 times. At the present time, this industry puts out about 150 different types of products.

On the basis of new and effective technological processes and equipment, large modern specialized plants have been erected for the production of feed yeast from wood pulp, with an output capacity of 30,000-60,000 tons per year. Basically new continuously operating installations have appeared. Plants with annual output of 180,000-240,000 tons each per year are working with another form of raw material--liquid purified petroleum paraffin. At the Kirishskiy Biochemical Plant in Leningrad Oblast, feed yeast is recovered from both wood pulp and liquid petroleum paraffins.

The Livestock Industry as the Main Customer

Feed yeast is the product of the protein microbiological industry that is produced in largest quantity; it is unique in abundance of protein, amino acids, vitamins and other biologically active substances. One ton of yeast added to feed is equivalent to 5-7 tons of grain, and it provides for production of an additional 0.8 ton pork or 1.5 tons of live weight poultry. Addition of 1 ton of such supplement to the diet of calves and piglets saves 6 tons of whole milk.

Under the last five-year plan, the yeast produced in the nation (part of it is also delivered to agriculture by enterprises of the paper and pulp, as well as food industry) was used to enrich many tens of millions of tons of mixed feed.

Feed lysine is produced by the Shebekinskiy (Belgorodskaya Oblast) and Livanskiy (Latvia) biochemical plants and a number of other enterprises. Addition of lysine products to the diet of farm animals increases significantly their productivity, it also increases weight gain, lowers feed outlay and shortens fattening up periods. Each ton of this product produced by the microbiological method makes it possible to produce an additional 10 tons of pork or to save 125 tons of grain. The economic effect of using 1 ton of lysine in swine farming constitutes 18,000 rubles.

Industrial premix production is also developing. With addition of only 1% of this complex supplement feed is enriched (balanced) for all of its biological constituents, including mineral salts and trace elements.

In the years of the 10th Five-Year Plan, the microbiological industry produced about 3 million tons of feed yeast and more than 20,000 tons of lysine, which is much more than under the 9th Five-Year Plan. But, because of the increasing requirements of livestock industry for feed that is balanced in protein and other nutrients, the workers of the microbiological industry are presently confronted with new and more responsible tasks.

Production to be Increased at a Fast Pace

The advances of modern biotechnology offer realistic conditions for building up the production of microbiological protein, amino acids and other feed supplements at a fast rate, on the basis of industrial, rather than agricultural, sources of raw material. In accordance with the decisions of the 26th Party Congress, the workers in this sector will have to increase output by 1.8-1.9 times in 1981-1985. There are plans for significant increase in output of feed yeast, lysine, premixes, microbiological agents for the protection of plants, as well as other products of microbiological synthesis.

Under the current five-year plan, a concrete program has been defined for development of this sector. It contains measures for further intensification of existing enterprises, development and introduction of new, highly productive strains, more efficient loading of equipment, lowering outlay of raw material and making economical use of fuel and energy resources. In order to fulfill the heavy tasks of the 11th Five-Year Plan, in addition to wide-scale capital construction, the Glavmikrobioprom must give first and foremost attention to the utilization of existing reserves for improving the efficiency of production.

This sector has every opportunity to cope with the greater tasks. Stable work groups have been formed there, and the professional skill of most workers has improved appreciably. Management of shops and laboratories is implemented by a staff of diploma-holding specialists. Their number has increased by almost 2.5 times in the last 10 years. In 1970, there were only 16% engineers among the production foremen. Now, one third of the foremen are specialists with higher education and 58% have secondary technical education. All this creates good conditions for improving the technical and economic indicators, intensification of technological processes, refining and organizing labor.

Accelerated achievement of planned capacity of existing and new enterprises, shops and production facilities constitutes a large reserve for this sector. In this respect, the workers of many plants have accumulated solid knowhow, and they are continuing to upgrade it. Thus, the workers of Berdskiy Chemical Plant in Novosibirskaya Oblast have planned to increase output under the current five-year plan by 2.5 times as a result of intensification of production, introduction of scientific developments and supplying shops with more efficient equipment. On the same basis, the workers at the Progress Plant in Tselinogradskaya Oblast found a way to produce twice as much lysine under the current five-year plan as in the last one.

Within a short time, the workers at the Omutninskiy Biochemical Plant in Kirovskaya Oblast managed to reach the planned capacity for a new type of product. The knowhow of progressive enterprises merits the broadest dissemination in this sector.

At the same time, some plants under the Glavmikrobioprom are slow in reaching planned output capacity, even though the target dates have elapsed. They include the Manturovskiy Biochemical Plant in Kostromskaya Oblast. It produces about half the amount of feed protein that should have been produced. This new plant was received for operation with some serious omissions. For example, the road for receiving wood pulp delivered by water has still not been built.

At the Shebekinskiy Biochemical Plant, only 40% of the planned capacity for lysine production has been reached. Mistakes in planning documents, building flaws and flaws in organizing the technological process are involved. Like in other plants, construction of housing in Shebekino is behind, and this leads to undermanning of the work shops.

Quality and Savings

In order to reach the frontiers set forth in the current 5-year plan, there must be intensive introduction of scientific and technological progress in this sector. One of the main directions is automation of technological processes and using equipment with higher unit output capacity. There must be faster development and introduction of continuous technology, waste-free production methods for the purpose of complex processing of raw material.

However, not everything that could be is being done for speedy introduction of the latest advances in science and technology. Some of the tasks listed in the special programs are not performed at the scheduled time. Sometimes, flawed technical proposals are made.

It is the duty of workers in the microbiological industry to improve product quality concurrently with increase in output thereof. In recent years, several steps were taken in this direction. In 1980, the share of production awarded the State Seal of Quality constituted 18%, versus 2% in 1975. While there were 4 products awarded the honorable pentagon symbol before, this now applies to 27. The goal for 1985 is to have at least 25% of all products of the highest grade of quality.

Microbiological processes are quite material and energy consuming. For this reason, the most important factor in improving the efficiency of production and quality of work is to lower the outlay of raw material and fuel and energy resources. According to the draft of the 1981-1985 plan, by means of wise use of all types of resources and processing of secondary types of raw material and materials as a whole under the Glavmikrobioprom, there will have to be significant reduction of material use in production. In 5 years, the specific outlay of electricity will have to be lowered by 12% and that of thermal energy by 5%.

The worker groups at progressive enterprises, who are systematically strengthening the economy regime, are reaching good indicators with regard to utilization of raw material and materials, with a high quality of products. For example, the Volzhskiy Yeast-Hydrolysis Plant in Mariyskaya ASSR uses 8.9 cubic meters of wood pulp per ton feed yeast, versus an average of 13 cubic meters for the industry as a whole. The performance of workers at the Svetloyarskiy Plant is also excellent, and they are recovering 1 ton of protein-vitamin concentrate per 1.1 ton liquid petroleum paraffin. At the same time, there are enterprises in the industry that are utilizing unjustifiably large amounts of raw material and materials.

* * *

In the last three quarters of this year, the enterprises under Glavmikrobioprom have increased their output by 8%, as compared to the same period last year. But there is a shortfall in the plan for January--September. This was attributable to flaws in organizing production, labor and management at some plants. Rhythmic output has not been organized at all enterprises by far.

This industry requires improved delivery of raw material and materials by subcontractors. Enterprises under the USSR Ministry of the Petrochemical Industry are not meeting their contractual obligations. Since the first of the year, they have been short in deliveries of purified paraffin by about 60,000 tons. There are interruptions in delivery of wood pulp by the USSR Ministry of the Lumber and Paper Industries. In some cases, the railroads are to blame for failure to ship the latter.

There is not much time left to the end of the year. There must be intensification of competition at enterprises of the microbiological industry to increase product output by each piece of equipment and lower expense coefficients, to intensify production and, through business-like cooperation with subcontractors, assure fulfillment of the plan for the first year of the 11th Five-Year Plan.

Outstanding Enterprises of the Industry

The following enterprises have made remarkable labor achievements under the 10th Five-Year Plan and are currently leading in the All-Union socialist competition, having successfully fulfilled the assignments for 3 quarters of 1981: Berdskiy Chemical Plant in Novosibirskaya Oblast, Bobruyskiy Hydrolysis Plant in Mogilevskaya Oblast; Vyshnevolotskiy Plant of Enzyme Products in Kalininskaya Oblast, Yefremovskiy Biochemical Plant in Tul'skaya Oblast, Omutninskiy Chemical Plant in Kirovskaya Oblast and Svetloyarskiy Plant for Production of Protein and Vitamin Concentrates in Volgogradskaya Oblast.

Enterprises With Shortfalls

For a long time, the following have been lagging and did not fulfill the tasks for the 9-month period with regard to the main technical and economic indicators; they have made unwise use of raw material, fuel, energy and other resources: Angarskiy Plant for Production of Protein and Vitamin Concentrates in Irkutskaya Oblast (former director: comrade Shumilov), Shebekinskiy Biochemical Plant in Belgorodskaya Oblast (former director: comrade Vasil'yev), Gubakhinskiy Biochemical Plant in Permskaya Oblast (director: comrade Batikov), Manturovskiy Biochemical Plant in Kostromskaya Oblast (director: comrade Savinykh), Progress Plant in Tselinogradskaya Oblast (director: comrade Timon'kin) and Khakasskiy Hydrolysis Plant in Krasnoyarskiy Kray (director: comrade Kovalev).

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